

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter: Digital Audio Broadcasting Systems NRSC-5 Proposed Standard for IBOC)))	MM DOCKET NO. 99-325
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Comments of Leonard R. Kahn, PE, FIEEE

INTRODUCTION AND BACKGROUND

There is now an overabundance of proof¹ that, it is believed, will convince the Commission to abandon these decade long Rule Making Proceedings and conclude that Docket No. MM 99-325 has been a total waste of the Commission's valuable time and resources... UNLESS the sheer audacity of the IBOC² international cartel's³ hubris in demanding the Government grant it full life and

¹ This proof is provided in a number of documents, many of which are on file in these proceedings. The undersigned plans to file a formal Reply shortly before August 27th 2005, and he will then provide a comprehensive list of comments, including even some comments that support the iBOC system. However, he assumes that a large number of form type letters will be filed by NPR and he expects to list only the one most informative NPR filing.

² The undersigned has used in KCI's website, wrathofkahn.ORG, the acronym "iBOC" instead of "IBOC" (In Band-On Channel) to distinguish between the FCC's generic term and the specific system which is the subject of the instant NAB/NRSC Report. Clearly, the instant submission does not pertain to KCI's Cam-D™ IBOC System. The iBOC acronym is not protected by KCI and others may use it freely.

³ That the major investors in the iBiquity Digital Corporation are international in fact can be confirmed by visiting the firm's website. Black's Law Dictionary, 4th Ed. defines "Cartel" in part as *A combination of producers of any product joined together to control its production, sale, and price in any particular industry or commodity.* (Citing the Federal NY District Court) Of course, there are lawful cartels and the instant Comments do not take a position on such matters except to note that unlike FCC Broadcast Licensees there is no indication in the Commission's

death control over AM and FM Radio, provides a sufficient stimulus for the Commission to abandon its present procedures for evaluating new technology.

These procedures permit such groups as NAB and the NRSC to gain practical control of the FCC Rule Making process, whenever complex technology is involved. History proves that these Associations and Committees have almost a perfect record of being wrong in providing engineering advice to the Commission and, indeed, have recommended actions that proved to be counter to the Public Interest going back to at least Major Edwin H. Armstrong and his introduction of wideband FM Broadcasting.

SUMMARY OF MAIN ARGUMENTS OPPOSING THE MM 99-325 ORDER

On January 24th of 2003, prior to the Kahn Communications, Inc., (KCI), development of the Cam-D™ System and prior to any belief that KCI would consider competing in the IBOC competition, the undersigned submitted a Request for Rulemaking which primarily called for a Blue Ribbon Panel of prestigious individuals with knowledge of FCC procedures comprising former FCC Commissioners and other senior FCC officials who could devote the time to formulate new rules for providing unbiased advice to the Commission re ways of obtaining technical advice. Thus, the Blue Ribbon Panel would propose to the Commission appropriate procedures for replacing the NAB/NRSC failed advisors,

files of who actually controls the group. If such information is being maintained under seal, the undersigned urges the Commission to unseal it, so that an *RKO General Inc. v. FCC*, 670 F.2d 215, cert. denied, type investigation can be initiated.

who are clearly subject to a serious conflict of interest disability.

In addition, this January 2003 formal filing (assumed to be still undocketed due to clerical oversight as in over two years it has not been assigned a Docket No. so that the Public can submit comments) described just how bad the latest NAB/ NRSC work product really is using the following words:

In the starkest terms, the MM 99-325 Rule Making can dramatically alter AM & FM Radio as we know it, converting a service that almost every single American uses every day of the year, to a new form of unproven technology whose AM version ONLY WORKS DURING DAYLIGHT HOURS and occupies 1-1/2 times the current bandwidth. Furthermore, it is a major step in DAB Proponents' avowed plan to fully digitalize Radio Broadcasting which will render obsolete every single radio receiver owned by the Public and require their replacement with more expensive radios. In addition, the final Plan (and even the interim plan) requires massive equipment and license expenditures by AM & FM participating stations, and these huge costs, as well as a dramatic increase in interference, may force many independent rural stations out of business.

The AM DAB situation is analogous to an automobile manufacturer introducing a new type of vehicle that can only be driven during daylight hours and which is

1-1/2 times as wide as the widest vehicle on the road, so that it cannot be driven over most of America's highways. And which eventually will force all of the other cars off the road!

Of course, the above 2003 statement is based upon then available information. Subsequently KCI did detailed measurements on WOR and also studied reports from a number of prestigious engineers who had made accurate measurements of the iBOC spectrum, and most importantly, the practical interference effects on stations adjacent to iBOC stations thus revealing just how bad iBOC "jamming" really was.

Furthermore, the undersigned having seen a Bell Labs publication that described in some detail the basic structure of their system, it became clear that they were using old technology, which is subject to a special type of analysis which yields accurate results as to the best performance of the iBOC system. And now most conveniently, [for obvious financial reasons, those international investment bankers, including a huge Swiss bank apparently wants immediate proof that this iBOC program will stop spending money and start paying off], in the order of a hundred stations have started DAYTIME only iBOC operation.

Accordingly, it is necessary to admit my errors and revise my Road analogy as follows:

The AM DAB situation is analogous to an automobile manufacturer introducing a new type of vehicle that can only be driven during daylight hours and which is SEVEN times as wide (140 kHz occupied bandwidth) as the widest vehicle on the road, so that it cannot be driven over any American highway. And which eventually will force all of the other cars off the road! BUT, there is much more for the Commission to consider as to just how

ridiculous the iBOC AM proposal actually is.. The undersigned has been critical of a number of prior FCC Rule Makings, but iBOC is orders of magnitudes more of a potential disaster. And more importantly, this proceeding is coming to a conclusion during wartime, just when AM Radio cannot be more valuable to the Public. For sheer commercial reasons to knowingly lobby for the destruction of AM Radio is, in the politest words, most reprehensible.

**IBOC SIGNALS WILL NEVER WORK AT NIGHT, EVEN IF
THE FCC ALLOWED IBOC STATIONS TO GO ALL DIGITAL**

This atement may even be news to those huge broadcasters, who have invested huge amounts of their stockholders' money in the iBOC scheme. Many iBOC supporters think the problems of iBOC would be instantly cured if the FCC forced small and large analog stations off the air, and thereby also force the American Public to junk its huge investment in over 800 Million working radios.

But, even if the FCC went along with such a radical plan that would destroy Free AM Radio, iBOC's inherent problems would not be solved. Clear channel 50 kw stations will not even cover their cities of license and skywave reception will disappear. *A Cam-D™ 100 watt station will provide better performance with existing radios in New York City than an "all digital" 50 kw iBOC station with the most expensive iBOC special receiver, and Cam-D would still sound much better.*

The Trillion Dollar "pot of gold" seekers, i.e., the gullible, non-technical "decision makers" of the big powerful broadcasters apparently do not realize they are not powerful enough to control the laws of physics...

Nor are they powerful enough to control the laws of man... Can one visualize the PUBLIC'S WRATH when it learns that the radios it paid for with its own hard earned money don't even work at NIGHT and someone turned off their favorite sports or news talk station and now wants them to buy a far more expensive radio, that still doesn't work at night!

WHY "ALL DIGITAL" IBOC SIGNALS WILL, EVEN IF THE PUBLIC SPENT THE TRILLION DOLLARS FOR THE NEW RADIOS, NEVER REPLACE FREE AM RADIO

The basic problem is that the medium wave standard AM band relies on skywave propagation, otherwise stations would have to rely on ground waves which are severely attenuated, especially when faced with poor ground conductivity. Thus, any digital or analog system must accommodate skywave propagation, if it is to be effective at night. This is a complex situation and while the undersigned has not done any recent work in the field since he first researched the Ratio Squarer Optimum Diversity System when he learned the following:

Fading on the medium wave band is essentially a phase or variable time delay problem, not an amplitude problem. This fact can be demonstrated by viewing the spectrum of a standard AM signal with a spectrum analyzer at night, while listening to the signal on a normal radio. One will note that even though the sound goes through complete nulls, the iBOC spectrum components only vary a few decibels, easily corrected by the receiver's automatic volume control circuit. Obviously, what is happening is the sidebands, being equal in amplitude, when

180 degrees out of phase produce a loss (null) of sound. This is one of the main reasons the POWER-side™ System has successfully reduced fading and why a somewhat more complicated Cam-D™ System provides even more effective operation during severe fades.

But the Hybrid iBOC and the incompatible "All Digital" iBOC systems CAN NEVER work at night, BECAUSE iBOC signals must be perfectly correlated.

WHY iBOC SYSTEMS CAN NEVER COEXIST WITH AM RADIO SIGNALS

Hybrid and "all digital" iBOC systems violate FCC Rules by over 60 db.

For the non-engineer that means both present and future iBOC systems violate the most important FCC Rule... the raison d'être for the forming of the FCC, protecting licensees and their listeners from interference... and iBOC violates these basic FCC Rules BY OVER A MILLION TIMES!

This interference energy is spread over seven channels. Thus, iBOC basic spectrum components cover a band of 140 kHz. This is especially serious at night when skywave propagation permit even low-powered signals to travel huge distances. Some engineers find this nighttime situation confusing arguing: "Since the iBOC signal coverage is so poor, how can the interference travel so far as to interfere over a thousand miles?" The answer is: The reason the iBOC signal has such poor coverage is that its components must be correlated in time and phase. And iBOC interference components don't have to be correlated.

IS AN ABUNDANCE OF CHANNELS GOOD FOR FREE RADIO BROADCASTING?

iBOC System supporters, especially NPR, point out that their System can support huge numbers of program channels. And while the undersigned would argue that other, less flawed systems, can also provide more channels than analog FM, BUT, the real question is this a good thing for Free AM & FM Radio? Basic free market theory indicates that the answer is " NO."

The reason is obvious. There are a finite number of listener-hours in a given radio station's market. Thus, if a station desires to increase its share, it will select a format that it believes will be successful and then it estimates how much must be budgeted to develop and maintain that specific audience share. Clearly, how much the station can budget for programming and new technology depends on market share. This relationship prevails for both small and large stations, but hurts somewhat more growing and new stations, that have a higher price to pay to enter the market.

This is analogous to currency Gresham's Law..Bad (cheap) programming and hardware will drive out good programming and hardware.

It is also noteworthy that NPR stations following what sounds like Government mantra, has in every highly redundant filing stressed the great advantages of a plethora of channels. Of course, NPR is not controlled by the forces of Free Radio, and indeed, the U.S. Treasury funds all of NPR's iBOC related equipment purchases and the Treasury also pays it for promoting iBOC! And, the result of NPR's installation Government paid iBOC equipment is the "jamming" of other stations that may have a different political viewpoint.

(Please see the May 11, 2005 issue of wrathofkahn.ORG.)

In any case, investigating the true effect of dramatically increasing the number of program channels would be just the type of question that the FCC might consider assigning to the above described "Blue Ribbon" Panel.

Summary and Prayer

The Public will never understand why the FCC gave its stamp of approval to a proprietary system that literally jams neighboring stations, sounds like a poor phone connection, and DOESN'T WORK AT ALL AT NIGHT and can NEVER provide the same nighttime service that the Public relies on from KSL, WOAI, WABC, WBZ, WCBS, WLW, WLS, WWL, KNX, WGN, WTOP, KFI, XETRA, KCBS, KNBR, WJR, KMOX, KOY, KLAC, WRVA, etc., now offer every night of the year.

If you were to ask a 100 people in any village, town or large city, such as NYC or Washington, DC, whether the FCC would approve an AM Radio system that can never WORK AT NIGHT, none of them would believe it. Especially if those 100 people happened to be members of the United States Senate.

For the iBOC Cartel to display such total disrespect for the Commission is unacceptable, and clearly it will never succeed. Having decades of experience working on numerous FCC supported committees, and having been a party in a number of Rule Makings, I know this Commission will reach the correct decision. However, the matter requires immediate action as irreparable harm is being done to a vital American Resource, especially now when our Country is under the most

dangerous attack on our homeland in our entire history.

Accordingly, to avoid taking further money from; members of the innocent Public who have been misled into buying useless expensive iBOC radios, innocent Broadcasters who have been stampeded into endangering the very solvency of their stations, and even taking huge amounts of money from international bankers who apparently do not know the meaning of Due Diligence, all of which seriously endangers the reputation of this Agency:

It is Respectfully urged that the Commission immediately bring these proceedings to an end. And, it is further Respectfully Requested that this Honorable Commission initiate an investigation to determine if licensees and the iBOC controlling firms should be sanctioned so that other such horrendous attacks on the Public Interests are never again attempted.

Respectfully submitted,


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cc: iBiquity Digital Corporation